

# **Apparatus and Method for Sampling Timing Compensation in Multi-carrier System**

## **Abstract**

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The present invention provides an apparatus and an associated method for sampling timing compensation, which can estimate sampling frequency offset between the receiver and transmitter of a multi-carrier system according to estimated frequency responses of two consecutive received symbols within each pilot subchannel, and compensate an accumulated sampling timing offset resulted from the sampling frequency offset. When the accumulated timing offset is not large, the apparatus uses a phase rotator to compensate with a corresponding accumulated phase rotation in frequency domain. When the accumulated timing offset is large, the apparatus first compensates with a specific timing offset in time domain, and then uses the phase rotator to compensate with a phase rotation corresponding to the remaining timing offset in frequency domain. A timing controller is used to compensate with the specific timing offset by adjusting a clock generator or a cyclic prefix remover of the receiver.

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